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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/655,946	09/04/2003	Tong Xie	10030187-1	7020

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Kathy Manke
Avago Technologies Limited
4380 Ziegler Road
Fort Collins, CO 80525

EXAMINER	
SHERMAN, STEPHEN G	
ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
09/27/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

avagoip@system.foundationip.com
kathy.manke@avagotech.com
scott.weitzel@avagotech.com

Office Action Summary	Application No.	Applicant(s)	
	10/655,946	XIE ET AL.	
	Examiner	Art Unit	
	Stephen G. Sherman	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 20-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *3,12 and 22* is/are allowed.

6)☒ Claim(s) *1-2, 4-11, 13-18 and 20-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 21 August 2007 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-2, 4-11, 13-18 and 20-21 found in the Appeal Brief filed 27 February 2007 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-2, 5-8, 11 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCallister et al. (EP 0 957 448 A2) in view of Hollstrom (WO 01/61451 A2).

Regarding claim 1, McCallister et al. disclose an apparatus and electronic device for optical navigation on a display screen comprising:

a surface comprising an aperture (Figure 2A and paragraph [0047] explain that the light enters the device through sensor port area 154, which allows light to be admitted to the housing, i.e. there is an aperture where the light passes.),

said surface configured to be moveable against an illuminated surface or a display screen (Paragraph [0061] explains that any surface may be used as the surface 130 in Figure 2A, which covers an illuminated surface and a display screen.);

an optical motion detection circuit integral to said apparatus and optically coupled to said detectable texture of said illuminated surface (Figures 2A-2C show sensor unit 120 integral to the apparatus and paragraph [0047] explains the optical coupling of the sensor unit 120 and the area to be imaged 132 of surface 130. Paragraph [0056] explains that there is a detectable texture.),

said optical motion detection circuit comprising a single detector for acquiring images of said surface (Figures 2A-2C show sensor array 122, which act as a single detector for acquiring images as explained in paragraphs [0047] and [0055].),

said detector acquiring a single image at a time, and comprising an image processor producing motion signals indicative of motion of said surface relative to said detectable texture of said illuminated surface (Paragraph [0057] explains that the sensor array 122 detects the relative movement of artifacts across its field of view in any arbitrary direction.),

wherein said motion signals are produced by comparing two said images and comprise a change in location in a first axis and a change in location in a second axis (Paragraphs [0055] and [0057]-[0058]),

wherein said optical motion detection circuit is operable to detect said detectable texture without requiring an integral illumination source (Paragraph [0048]).

McCallister et al. fail to explicitly teach of acquiring images of said surface at a specified rate.

Hollstrom discloses an apparatus and electronic device for optical navigation comprising:

a single detector for acquiring images of said surface at a specified rate (Page 7, lines 25-31).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to use the idea of taking images at a specified rate as taught by Hollstrom with the optical navigation device taught by McCallister in order to allow for the accuracy of the device to be precisely determined.

Regarding claim 2, McCallister et al. and Hollstrom disclose the apparatus as recited in claim 1 further comprising

an optical element integral to said apparatus (Figure 2A shows reflector and reflector surface 156 and 157),

said optical element proximate said aperture (Figure 2A shows 156 proximate to aperture 154) and receiving light from said detectable texture of said illuminated surface (Figure 2A shows reflector 156 receiving light 124),

said optical element operable to optically couple said optical motion detection circuit integral to said detectable texture of said illuminated surface (Figure 2A shows that reflector 156 optically couples sensor unit 120 and the surface 130.).

Regarding claim 11, this claim is rejected under the same rational as claim 1.

Regarding claims 5 and 13, McCallister et al. and Hollstrom disclose the apparatus as recited in claim 1 and the electronic device for optical navigation on a display screen as recited in claim 11.

McCallister et al. also disclose a light pen comprising an internal power source for providing power to said apparatus (Paragraph [0054]).

Regarding claims 6 and 14, McCallister et al. and Hollstrom disclose the apparatus as recited in claim 1 and the electronic device for optical navigation on a display screen as recited in claim 11.

McCallister et al. also disclose wherein said illuminated surface is a cathode ray tube and wherein said detectable texture is a shadow mask of said cathode ray tube (Paragraph [0061] explains that any surface may be used as the surface 130 in Figure 2A, which covers a shadow mask CRT, which also means that the texture being detected would be a shadow mask since a shadow mask is located between the electron gun and the phosphor for directing the electron beams to the individual phosphors, and thus by detecting the image on the display screen the shadow mask is indirectly being detected.).

Regarding claims 7 and 15, McCallister et al. and Hollstrom disclose the apparatus as recited in claim 1 and the electronic device for optical navigation on a display screen as recited in claim 11.

McCallister et al. also disclose where the illuminated surface is a liquid crystal display and wherein said detectable texture is a diffuser plate of said liquid crystal display (Paragraph [0061] explains that any surface may be used as the surface 130 in Figure 2A, which covers and LCD screen, and thus by detecting the images on the LCD, the diffuser plate would indirectly be detected since light to create the images is passed through the diffuser plate.).

Regarding claims 8 and 16, McCallister et al. and Hollstrom disclose the apparatus as recited in claim 1 and the electronic device for optical navigation on a display screen as recited in claim 11.

McCallister et al. also disclose discloses wherein said detectable texture comprises pixels of said liquid crystal display (Paragraph [0061] explains that any surface may be used as the surface 130 in Figure 2A, which covers and LCD screen, and as such by detecting the images on an LCD the pixels would be detected.).

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gordon et al. (US 6,433,780) in view of McCallister et al. (EP 0 957 448 A2).

Regarding claim 20, Gordon et al. disclose a method for optical navigation on an illuminated surface using an electronic device, said method comprising:

acquiring a first frame from said illuminated surface (Figure 5, step 31) at a single detector (Column 10, lines 39-43 explain that the images are taken using a photo detector) of said electronic device;

acquiring a second frame at said single detector from said illuminated surface (Figure 5, step 33);

determining a change in position in a first axis and in a second axis of said electronic device relative to said illuminated surface based on said first frame and said second frame (Figure 5, step 40 and 44),

wherein said determining a change in position comprises:

computing correlation values for said first frame and said second frame after said second frame has been shifted along one of said axes to determine an indication of movement of said electronic device from said first frame to said second frame (Figure 5, steps 33 and 34 take place after a shift in the reference frame takes place. This means that after the second image has been shifted to indicate movement the correlation values are computed.);

predicting a shift in position from said first frame based on said correlation values (Figure 5, step 40); and

outputting a motion signal indicating said shift in position (Figure 5, step 44).

Gordon et al. fail to teach that said electronic device does not require an internal illumination source to provide illumination to said illuminated surface.

McCallister et al. disclose wherein an electronic device does not require an internal illumination source to provide illumination to said illuminated surface (Paragraph [0048]).

Therefore, it would have been obvious to "one of ordinary skill" in the art at the time the invention was made to make the electronic device taught by Gordon et al. have the configuration of not needing an integral illumination source as taught by McCallister et al. in order to reduce the power consumption of the electronic device.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCallister et al. (EP 0 957 448 A2) in view of Hollstrom (WO 01/61451 A2) and further in view of Lauffenburger et al. (US 6,963,059).

Regarding claim 4, McCallister et al. and Hollstrom disclose the apparatus as recited in claim 1.

McCallister et al. also disclose a light source (Figure 2A and paragraph [0049] explain that LED illumination 172 is provided) that provides illumination onto a surface in response to an optical motion detection circuit (Paragraph [0068] explains that the LED can be switched on and off under control by the sensor unit 120).

McCallister et al. fails to explicitly teach that the LED provides illumination onto a surface in response to an optical motion detection circuit detecting insufficient illumination of the surface.

Lauffenburger et al. disclose a light source (Fig. 2, item 10) that provides illumination onto a surface in response to an optical motion detection circuit detecting insufficient illumination of the surface (see col. 8, lines 6-12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Lauffenburger et al. in the teachings of McCallister et al. and Hollstrom in order to increase the power of the LEDs if the detected illumination was deemed too low to improve accuracy in the optical navigation.

8. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gordon et al. (US 6,433,780) in view of McCallister et al. (EP 0 957 448 A2) and further in view of Lauffenburger et al. (US 6,963,059).

Regarding claim 21, Gordon et al. and McCallister et al. disclose a method as recited in claim 20.

Gordon et al. and McCallister et al. fail to teach a method for determining whether illumination provided by said illuminated surface sufficient for said acquiring said first frame; and provided said illumination provided by said illuminated surface is not sufficient for said acquiring said first frame, providing additional illumination onto said illuminated surface.

Lauffenburger et al. disclose a method for optimizing illumination in an optical sensing device that comprises determining whether illumination provided by said

illuminated surface sufficient for acquiring a first frame (col. 7, line 15-17, and col. 8, lines 6-12, where each flash is considered a "frame" and detection of any frame can be considered a "first frame" relative to the time when a low light level is detected); and provided said illumination provided by said illuminated surface is not sufficient for said acquiring said first frame, providing additional illumination onto said illuminated surface(col. 8, lines 6-12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Lauffenburger et al. in the teachings of McCallister et al. and Hollstrom in order to increase the power of the LEDs if the detected illumination was deemed too low to improve accuracy in the optical navigation.

9. Claims 9-10 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCallister et al. (EP 0 957 448 A2) in view of Hollstrom (WO 01/61451 A2) and further in view of Burns (US 5,442,147).

Regarding claims 9 and 17, McCallister et al. and Hollstrom disclose the apparatus as recited in claim 1 and the electronic device for optical navigation on a display screen as recited in claim 11.

McCallister et al. and Hollstrom fail to teach an apparatus where wherein said illuminated surface is overlaid with a semi-transparent layer comprising said detectable texture.

Burns discloses a position-sensing apparatus comprising an illuminated surface (Fig. 31, item 30) overlaid with a semi-transparent layer (Fig. 31, item 14, see col. 43, lines 59-64) comprising a detectable texture (Fig. 31, item 20, see col. 43, line 59 to col. 44 line 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Burns in the teachings of McCallister et al. and Hollstrom to have a pattern with a detectable texture overlaid on the illuminated surface in order to be able to use an illuminated surface for optical navigation where there was no pre-existing detectable surface on it already.

Regarding claim 10 and 18, McCallister et al., Hollstrom and Burns disclose the apparatus as recited in claim 9 and the electronic device for optical navigation on a display screen as recited in claim 17.

Burns also discloses a semi-transparent layer comprising unique positioning information (Fig. 1B, item 15) providing absolute position information of said apparatus relative to said illuminated surface or display screen (see col. 7, lines 10-33).

Allowable Subject Matter

10. Claims 3, 12 and 22 are allowed.

11. The following is a statement of reasons for the indication of allowable subject matter:

Relative to dependent claims 3, 12, and 22, the major difference between the teaching of the prior art of record (McCallister et al. (EP 0 957 448 A2), Hollstrom (WO 01/61451 A2), Gordon et al. (US 6,433,780), Burns (US 5,442,147)) and the instant invention is that said prior art does not teach a device "to provide interference reducing illumination onto said illuminated surface in response to said optical motion detection circuit detecting interference caused by said illumination" (see lines 23-26 of claim 3 and lines 23-25 of claim 12) nor a method for "determining whether illumination provided by said illuminated surface interferes with said acquiring said first frame; and provided said illumination provided by said illuminated surface interferes with said acquiring said first frame, providing interference reducing illumination onto said illuminated surface" (see lines 21-26 of claim 22).

McCallister et al. teach of a device in which the in an internal illumination means (LEDs) and also external illumination (ambient light) and also teaches of the sensor unit being able to turn on and off the LEDs, however, McCallister does not teach of using the LEDs to provide interference reducing illumination. As such, Hollstrom and Gordon et al. both only teach of having a single illumination means and thus also do not teach of providing an interference reducing light source.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

10 September 2007